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KINGSTON MEDICAL QUARTERLY.

VOL. IV. OCTOBER, 1899. NO. I.

The KINGSTON MEDICAL QUARTERLY is presented to the Medical Profession with the compliments of the Editorial Staff. Contributions will be gladly received from members of the Profession and willingly published. JOHN HERALD, Editor.

THE CANADIAN MEDICAL ASSOCIATION.

ANOTHER meeting of the Canadian Medical Association has been held, and judging by the attendance, by the subjects under discussion, and by the progress made towards legislation for the betterment of the profession, this meeting will compare favourably with any one of those held in past years. We consider that it will be in keeping with the aims of the QUARTERLY for us to review, of necessity very briefly, some of the more important matters brought to the attention of the members. The address of the President demands our first consideration on account of its official character, and of the importance of the two questions which form the subject of the address—the Overcrowding of our Ranks and the Decadence of Scholarship in the Profession. As to the overcrowding the President does not attempt to prove it; he says it is self-evident. We will agree with him. Arguing from these premises he explains how many evils, in his opinion, have crept into the practice of medicine—small fees, quackery, even on the part of those who are legally qualified to practise, the undue increase in the number of specialties and specialtists, and the gradual disappearance of the family physician. Again we can and do agree with him. Before dealing with a remedy for these acknowledged evils the President dealt with his other question, the Decadence of Scholarship in the Profession. As the remedy which he proposes to apply to both evils is the same, we will follow his example and deal with the second part of his address. Any one who has had opportunities of coming largely in contact with medical students and practitioners will agree with the President that many of them have

not had the advantages of a liberal education before entering upon their professional studies, and such an one will also acknowledge that any practitioner, be his other qualifications what they may, would be the better of such ante-professional training and culture. But it might well be asked, has there been a decadence in such liberal education? Speaking for this country we are compelled to say no. The examinations required for matriculation at the universities and for registration with the councils are decidedly in advance of what they were say twenty-five years ago. Perhaps the President means that even yet these examinations are not a test of that liberal education which he would desire all medical students to possess before they enter upon their professional studies. In this we would agree with him, but in the face of the facts we cannot agree with him that the liberal education of medical men of to-day is less than it was in the days that are gone.

As a remedy for all those evils the President proposes a more liberal education for all would-be practitioners. We are at one with him on this point. By all means insist upon this. But will the application of this remedy do away with the terrible array of much to be lamented evils at present existing in the Profession? We think not. Education may improve a man—as a rule it does—but it will not always alter his character. All of us can call to our minds instances of men who have received the highest advantages in the way of liberal education, and who in spite thereof remain as they were by nature, cads and boors. We can also recall instances of men who, denied the advantages of such education, remain what they by nature were, perfect gentlemen. We all know men in the profession who in spite of their liberal education are failures and we at the same time know those who lacking this advantage are yet successful practitioners and an honour to the profession. No. Education will not do everything. It may, it will, improve but it cannot, it does not, alter a man's nature. Again, we might ask, will raising the educational requirements for entrance upon professional studies lessen the overcrowding. In the light of experience we must say no. In the good old days when the profession was not overcrowded the requirements for entrance upon medical studies were low. The standard in this particular was raised. The number of practitioners did not de-

crease but it increased. In this case, then, the remedy now proposed failed, and in our opinion it will fail again. Are we, then, opposed to a more liberal education for those who desire to enter our Professon? By no means. We are in favor of it. We simply mean to assert that as the want of such education is not the sole cause of the evils complained of, it is not the remedy which will remove them. By insisting upon a more liberal education we will without doubt improve the general tone of the Profession, but if we expect such a requirement to do away with overcrowding, to convert a cad into a gentleman, to abolish quackery from our ranks, we will be most sadly disappointed. Other causes besides the lack of preliminary education enter into the production of the evils of which the President very properly complains. Of these causes we will refer to a few—the tendency of those in the rural districts to remove to the large towns and cities irrespective of their calling—the inborn love of quackery among the people generally especially in matters medical—the natural "cussedness" of human nature which prompts individuals to desert the straight and narrow path of strict professional etiquette to travel on the wider and more devious paths of the quack and the charlatan. As we have said we do not believe that raising the standard of preliminary education alone will cure these evils. What further can be done in this direction? We fear that the crowding into cities will go on in spite of all that may be written or said. As to the other evils much may be done in educating the laity to believe and to know that their surest and best reliance is to be placed on the educated and intelligent physician, and that the charlatan and mountebank is to be avoided as one would avoid the three card monte man, for they will not only rob them of their money but so undermine their health that when they turn as a last resort to the qualified and honourable physician their case has become hopeless, and like the little girl with her catechism they have got beyond redemption. Much too, it has seemed to us, could and should be done in the medical schools. A course of lectures upon medical etiquette by some member of the faculty whose age and experience and honourable standing in the profession command the respect of all, should in our opinion form part of the final year's work. That even these means will entirely obliterate the evils complained of by the President, we do not

expect. They would, however, help to do so. Some men will be frauds and bloodsuckers in spite of all that others may do for them.

Another matter brought before the Association we would like to refer to, and that is Dominion Registration. We will preface our remarks with reiterating our approval of Dominion Registration—an approval which we have on more than one occasion set forth in the QUARTERLY. We would first affirm that we do not believe that any scheme for a Dominion Council will meet with general approbation or become a permanent institution which is not at least reasonably fair to all parties concerned. Such a Council, we take it, is intended to be a body representative of the profession throughout the Dominion. Yet we find the proposal made and agreed to, that each Province shall be represented on that Council equally. Without going into particulars we do not believe that this is fair, and, therefore, we feel that it is unwise, and in the future will lead to ill-feeling and probably to the overthrow of the whole scheme.

One more feature of the proposed representation and we have done for this issue of the QUARTERLY. One representative of each province is to be appointed by the Lieutenant-Governor in Council. Now we are loyal enough to have great respect for the gentlemen who occupy those high offices, but we have two objections to their appointing representatives to the Dominion Medical Council. The first is that we believe the members of Council should be appointed by the members of the profession, either directly or indirectly through the Provincial Medical Councils. Secondly, we fear, judging from past experience in other departments, that such appointments made by the Lieutenant-Governors in Council will not always be free from the well-founded suspicion of being made not in the interest of medical education, but in the interest of the political party which happens to be in power. By all means let us manage our own affairs, and, above all, let us keep the Dominion Council free from party politics.

THE LATE MR. LAWSON TAIT.

WHILE travelling in a Great Western Railway carriage from London to Birmingham on June 15th, I was startled at reading in a morning paper the announcement of the sudden collapse and death of Lawson Tait at Llandudno in Wales. Now for the first time it became known that he had not enjoyed good health for some years, but no hint of any such thing had previously appeared in any of the public prints or medical journals, and accordingly the profession was in no way prepared to meet the sudden announcement of his death. The unexpected announcement was to me a source of double regret, for at that very time I was making my way to Birmingham with the hope of seeing the eminent and world-wide known gynæcologist, and perhaps have some opportunities for witnessing his splendid methods of work.

By his death the science of surgery undoubtedly has sustained a great loss, but he was chiefly known throughout the world for his prowess in obstetric surgery, and his name in the profession will rank with that of Hunter, Simpson; and other famous men.

In his earlier years, after graduation, he received instruction at the hands of Alex. McKenzie Edwards, a clever young operating surgeon, while he also enjoyed the privilege of sitting at the feet of that brilliant master of medicine and the discoverer of chloroform, Sir James Y. Simpson.

It is interesting to note that he came prominently into public life in Birmingham through his undertaking a lectureship on physiology to a ladies' afternoon class. This class proved to be a conspicuous success, and was the means of introducing him to the ladies of many of the leading families in Birmingham, with whom he became exceedingly popular.

About this time a proposal was made for the establishment in Birmingham of a hospital specially devoted to the diseases of women. The project met with very strong opposition from many of the medical men, but the promoters of the new hospital found a strong argument in behalf of their scheme in the excessive mortality which then attended abdominal operations, and

which had reached the alarming figure of 75 per cent. When the scheme for the hospital had matured it was made a condition of the appointments that the honorary surgeon should possess the qualification of F.R.C.S. This requirement would have excluded Mr. Tait, but with characteristic determination he presented himself for examination and received the required fellowship. The hospital was duly opened, and was so conducted by him and his colleagues—Dr. Savage and others—that there was an immediate and even a surprising diminution in the mortality of the patients.

Mr. Tait, as an operator, possessed a steadiness and deftness of hand which was really marvellous, and which was equalled only by the courage with which he undertook operations which up to his time had been regarded as so risky as scarcely to warrant their performance. The quickness and exactness of his work were accompanied by no symptoms of haste or nervous tension. He was seen at his best in a difficult case, where his self-reliance and prompt resourcefulness in dealing with mechanical difficulties were triumphantly displayed.

Mr. Tait was a man of advanced and liberal views and in addition to his own chosen calling took a lively interest in the political and municipal affairs of Birmingham. He was a member of the Town Council for some years, and unsuccessfully contested the Bordesley Division for a seat in Parliament in behalf of the Gladstonian cause and Home Rule. The evolution hypothesis had a great fascination for his mind and prompted some of his contributions to general literature, and he was one of those who assisted in the establishment of a memorial to Darwin in his native town of Shrewsbury. Sir Henry Irving was also among those whose intimacy he enjoyed and no "first night" at the Lyceum was complete without him. Perhaps what created the greatest surprise among the members of the medical profession was his uncompromising opposition to vivisection, but it is generally conceded that his objection to the practice was honest and deep-rooted in his nature. He was personally a great lover of animals, of which he kept a large number, and he had a horror of inflicting what seemed to him unnecessary pain on helpless animals. In connection with his sudden death—the cause of which was chronic Bright's disease—there is one remarkable and

in a sense pathetic incident. About six weeks before his death Mr. Tait was present at a Medical Association meeting at Colwyn Bay. He was on the agenda to read a paper on "The Story of an Aching Kidney," but asked that it might be postponed to the next meeting as he had not all the data to hand at present to complete the paper. Great disappointment was manifest at this announcement, many of the doctors present stating that they had come purposely to listen to the paper read, but Mr. Tait persistently refused.

It is interesting to recall some words written by himself a month before his demise in a letter addressed to the *Medical Press and Circular* on the subject of vivisection and which may be called his own epitaph, "Some day I shall have a tombstone put over me and an inscription upon it. I only want one thing recorded on it 'he labored to divert his profession from the blundering which has resulted from the performance of experiments on the sub-human groups of animal life, in the hope that they would shed light on the aberrant physiology of the human groups.' Such experiments never have succeeded and never can; and they have in the cases of Koch, Pasteur, and Lister not only hindered true progress, but have covered our profession with ridicule."

Almost his last request was that his mortal remains should be interred in Gogarth Cave, a romantic spot within the garden of his residence. The cave was formerly a portion of the ancient Gogarth Abbey domain. He also desired that his funeral should be as quietly carried out as possible and not in any sense a public one. As it was contrary to the public health act for the body to be so interred, the Home Secretary was communicated with, with the object of carrying out the deceased's request. However it was subsequently decided to convey the body to Liverpool and have it cremated there in the Crematorium, after which the ashes were returned to Llandudno in an urn and deposited in his favorite Gogarth Cave.

R. W. GARRETT.

PRESIDENT'S ADDRESS.

Read at meeting of Kingston Medical and Surgical Society, Sept. 11th, 1899.

GENTLEMEN,—One year ago, when you did me the honour, to elect me your president, I took occasion to say to you that I assumed the responsibilities of the office with a good deal of diffidence and that, while I would do all in my power to prove myself worthy of the trust you then reposed in me, I would rely upon the hearty support and co-operation of the individual members of the Society to make our meetings interesting and instructive. I wish now to thank you, gentlemen, for the manner in which you generally (there have been a few exceptions) have aided me in the discharge of my duties. I can assure you that my labours have thus been lightened and my duties have been made a pleasure by this loyalty to your executive officers. I am sure you will not consider that I am drawing any invidious comparison when I thus publicly state that during the past year my duties have been rendered easy and pleasant by the cheerful and valuable assistance at all times given me by your Vice-president, Dr. Forster, and your Secretary, Dr. W. T. Connell. If we have had a successful year's work, and I am sure you will agree with me that such has been the case, it has been largely due to the active interest and unsparing endeavors of these two gentlemen. I consider that I am simply performing an act of justice when I thus express my appreciation of their service and remind you of the Society's indebtedness to these two model officers. As to myself, gentlemen, I wish most sincerely to thank you for unanimously re-electing me your President. The only reward for service done in a position of honour such as the Presidency of this Society is the appreciation and approval of those who compose the Society. My re-election I construe to mean that you are satisfied with my efforts to conduct the affairs of this Society in such a manner as will best tend to carry out the objects had in view by those who took an active part in its formation—the development of the professional, might I say fraternal, spirit among the members—the advancement of the interests of our profession—the interchange of views upon matters relating to the practice of the healing art and the cultivation of a greater interest

in the diseases to which flesh is heir with special reference to their detection, prevention and treatment. And now, gentlemen, I can only repeat what I said to you last year. I will do my best. I rely upon you. The success of this Society does not depend upon the efforts of me as your President nor upon any other individual member. To secure success all must assist. I feel confident that in the future, as in the past, all will continue to take an active part in maintaining what I regard as the phenomenal success of this Society so far.

In accordance with the time honoured custom it now becomes my initial duty to open the first meeting of the ensuing year's proceedings with what by courtesy may be called the President's Address.—

In deciding upon what subject I had better bring to your attention this evening I must confess I was met with no small difficulty. A purely technical discussion of some of the many subjects of general interest to members of our profession I deemed inappropriate. Such a discussion would be more fitting at our regular meetings. To find a subject which, while it might prove interesting, would not be of this special character was the first difficulty in preparing this inaugural paper. It occurred to me that as business men are in the habit of taking stock at stated intervals it would not be out of keeping with the aims of this Society if we should attempt to follow their example. I do not mean that we individually should take stock in the business sense of the phrase but that as a profession we should ask ourselves the questions, What have we accomplished ? and What have we to do ? While the business man will take stock at least once a year, it appeared to me that in the sense in which I am using the term our stock-taking should extend over a longer period. The closing years of a century would naturally seem to be an appropriate time to consider the two questions which I have asked. But, gentlemen, do not imagine that I purpose extending my enquiry over such a lengthened period nor that I am going to attempt to answer these questions fully even for a much shorter space of time. To do so would require more time than we have at our disposal this evening and would call for a more extensive knowledge than I have the temerity to lay ciaim to. Many things have been accomplished by the profession during the

century about to close to which I might call your attention. I might refer to the standing of the profession. Legally the profession has now a standing unthought of at the beginning of the century. More important, educationlly, even within our memories, consider the advances that have been made. Didactic teaching has given way more and more to clinical and practical work. The young man to-day who enters upon the practice of medicine is better equipped both theoretically and especially practically than was his predecessor of even 25 years ago. Again I might refer to the more accurate means we now have at our disposal for the diagnosis of disease. The senses of sight, touch, hearing are now more systematically called into use in the diagnosis of disease and the phenomena thus detected and their clinical significance are more definitely understood than they were even when we began the study of medicine. Instruments to aid and extend the use of the senses are now generally employed which formerly were unheard of. In recent years Chemistry has been called to the aid of the diagnostician and the secretions and excretions of the body by its aid have been compelled to give us information regarding the nature of disease. Microscopy applied to diagnosis has opened up a new field. The pathologist and the bacteriologist have come to the assistance of the physician. By all these aids diagnosis has approached nearer and nearer an exact science. Again I might refer to the changes which have taken place in our methods of treatment. As bacteriology and pathology have revealed to us more of the causation and nature of disease, and as we by the improved methods are enabled more accurately to determine the particular form of disease from which a particular patient is suffering, we are in a position the more rationally to treat that desease. Knowing the cause we direct our efforts to remove or combat that cause. Without going into particulars a few instances in which treatment has undergone a complete revolution might be referred to. In febrile conditions the use of cold water formerly prohibited is now universally freely employed both for internal administration and external application. Much of the discomfort of a febrile patient is caused by the tissue hunger for water. This we now allow our patients and thus satisfy the demands of his impoverished system and relieve him of

suffering and thereby assist him on the road to recovery. The external use of cold water—either by sponging, by the pack or by the bath—is now generally adopted in these conditions and in my opinion stands pre-eminently at the head of our anti-pyretic agents without the untoward effects which attend the use of many of the drugs of this class. As another instance of change in treatment I might refer you to the use of blisters in inflammatory conditions. Many of us can remember when their use was fairly general say in Pneumonia. Now their employment must be very rare. They were succeeded by poultices and these again by the pnuemonia jacket with or without an irritant application and by many even this is not employed. That pneumonic patients have not suffered by these changes in the mode of treatment is manifest by the decreased death rate. Again in the medication employed in this affection what a change has taken place. Calomel and depressant drugs gave way to stimulating expectorants and now there is a strong tendency to doubt the efficacy of these. Pneumonia being an acute specific affection which runs a definite course many regard the main indications for treatment to be to control the temperature and to sustain the patient. For the first indication cold water externally and for the second circulatatory and respiratory stimulants are by many recommended. I freely confess that I am of the latter number and that such is not an unsuccessful mode of treatment the records of the Kingston General Hospital will show. The strength of these patients must be maintained. This requires that they should not have their digestive powers in any way impaired. My experience goes to show me that the administation of expectorants has a strong tendency to produce anorexia, nausea and at times even emesis.—Even those who believe in the adminstration of such drugs will admit that these results have an injurious effect upon the patient and retard his recovery. Again I might refer you to what was a universal practice in all febrile and inflammatory conditions not many years ago, viz.—blood-letting, a practice which has now practically become obsolete. Here I would simply point out that the history of blood-letting as a therapeutic agent illustrates the tendency of not only the medical profession but of human nature in general. If any particular drug or mode of treatment has been apparently of benefit the tendency is to extend its field of

application until it is employed in many conditions—some the diametrical opposites of others. Thus the remedy becomes discredited and we fly to the other extreme and discard it entirely. Such has been the history of blood-letting. That it was abused there can be no doubt. That it is a rational mode of treatment in full-blooded patients who are suffering from such diseases as apoplexy and uræmic poisoning is still maintained by many, and my own experience goes to convince me that in such conditions it is a therapeutic means not to be overlooked. I am convinced that I have seen improvement follow its employment. Again I might instance the advances made in Surgery which have been rendered possible by the discovery of anæsthetics and antiseptics. As other instances of improvement in therapeutics I would simply refer to hypodermatic medication—the use of antiseptics—the employment of anæsthetics—the regulation of the diet according to the known requirements of the disease—the transfusion of blood and saline solutions—serum therapy.

Such are a few of the many gains made in our methods of diagnosis and modes of treatment. Were this all the profession had accomplished we would not have cause to be ashamed. But we have a wider and even a nobler field than the diagnosis and treatment of disease. To cure an individual suffering from any one of the many curable diseases is an act of mercy deserving his gratutitude. To prevent the spread of disease is the work of a public benefactor. This prevention of disease, it has seemed to me, has been the crowning glory of our profession during the century now about to close. Some one has said "An ounce of prevention is better than a pound of cure." If this be true, how great a debt of gratitude mankind owes the medical profession. For allowing all due credit to humanitarians, philanthropists, scientists and legislators, the main credit for sanitary reforms in every country must be awarded the profession we have the honor to belong to. Our profession has pointed out the nature of disease, the modes of its spread and the means to curtail its ravages. These facts being brought to the attention of the public the necessary steps have been taken to enforce the requisite precautions. Gentleman, I will not weary you with attempting a detailed statement of what has been done in this direction. You know as well as I. Permit me, however, in a general way

to mention a few of the steps which under the guidance of the medical profession have been taken to protect our fellow beings from the attacks of disease. Proper sanitary precautions in the building and ventilation of dwellings and workshops, the removal and disposal of sewage and garbage, the supplying water for domestic purpose free from disease bearing germs, the prohibiting the sale of unwholesome food, the isolation of those suffering from contagious and infectious diseases, the disinfection of the homes and the clothing of those who have been so affected, the immunization of those who have been exposed to contagion—these are some of the measures now taken to protect mankind from disease. As I have already claimed the main credit for these wise precautions must be given the medical profession.

What, it might be pertinently asked, has been the deterring effect on the spread of disease of these sanitary measures? This is a difficult question to answer. For our answer we must rely upon statistics, and herein lies our difficulty. Figures, it has been said, can be made to prove anything. But over and above this possible source of error, we have to contend with the probable unreliability of the statistics furnished in the earlier years of the century. Records of disease were not then kept as accurately as now, and, without reflecting upon the ability of our predecessors, we may safely assert that the diagnosis of disease was not formerly as accurate as it is in our day. With these provisional remarks I submit for your consideration the average annual death rate from infectious diseases per 1,000,000 persons living in England and Wales during each quinquennial period, from 1847 to 1891, compiled from Stevenson & Murphy's work on Hygiene and Public Health:

AVERAGE ANNUAL DEATH RATE PER 1,000,000 LIVING IN ENGLAND AND WALES DURING EACH QUINQUENNIAL PERIOD.

	1847-1851.	1852-1856.	1857-1861.	1862-1866.	1867-1871.	1872-1876.	1877-1881.	1882-1886.	1887-1891.
Measles	403	399	425	457	428	273	385	413	468
Scarlet Fever	884	907	806	982	960	759	680	436	241
Whooping Cough	472	540	524	541	489	495	524	470	443
Diphtheria	....	....	....	231	121	144	120	162	174
Croup	233	262	292	193	182	146	163	117	
Diphtheria and Croup	....	....	523	314	326	266	325	291	
Influenza	207	96	64	38	28	12	8	4	148
Erysipelas	111	90	91	86	105	80	76	52	
Simple Continued Fever	....	....	....	....	139	62	30	14	
Enteric Fever	....	....	....	....	361	258	210	176	
Typhus Fever	....	....	....	....	67	29	20	6	

Relapsing Fever	....	....	....	....	42	29	12	7
Small Pox 312	105	187	234	282	232	87	60	15
Diarrhoea and Dysentery. 908	944	901	844	1111	905	761	722	581
Tuberculosis	2817	2582	2532	2396	2353	1981	1813	1607

Permit me to call your attention to these tables for a few moments. In the first place you will notice that the tables are are incomplete, even for this period, for a number of the diseases specified. For all the diseases enumerated the record is complete only from 1872 to 1891. Next, I would call your attention to the fact that there has been a most marked falling off of deaths from these diseases as a whole—in the period 1872-76, an annual average 6,232, or 62 per ct., to 4,049, or 40 per ct., in 1887-91. Again, you will observe that the decrease in the death rate has been least in those diseases which are lightly regarded by the public, and against which the least energetic measures have been adopted. The deaths from measles and whooping cough are practically uniform throughout the whole period covered by the statistics. Croup, against the spread of which little or no precaution has been taken, is an apparent exception to this general rule. I say apparent exception, for undoubtedly many cases were formerly reported as croup which would now be put down as diphtheria. For this reason I have combined the deaths from these two causes. The decrease in the death rate has been in proportion to the efforts made to curtail the spread of the various diseases referred to—Tuberculosis, Diarrhoea and Dysentery, Enteric Fever, Erysipelas, Scarlet Fever, Simple Continued Fever, Small Pox, Relapsing Pever, Typhus Fever. Lastly, I would call your attention to the large number of deaths reported as occurring from Tuberculosis, and the very slight decrease in that death rate—from 1852-56 an average annual death rate of 2,817, and in 1887-91, 1,607. The lesson I would glean from these tables is that the death rate from any contagious disease, against the spread of which energetic measures have been taken, has been proportionately reduced, and that the death rate from those that have been regarded as unimportant has remained practically stationary. The truth of this statement is still more strikingly demonstrated by the results of the restrictive sanitary measures taken against the spread of Cholera, Yellow Fever and Bubonic Plague. These diseases have in the past at each epidemic outbreak carried off their thousands, and have

followed the lines of travel, spreading from their original focus to localities far removed. Now each of these dread diseases are practically confined to their normal habitats. Uninfected districts are protected by quarantine and medical inspection and by compulsory sanitary cleanliness.

Having now pointed out in a very brief and imperfect manner what the profession has accomplished in the way of diagnosis, treatment and prevention, I would ask you to bear with me a few moments longer while I call your attention to the second question asked at the beginning of this paper, What have we to do ?

Much still remains to be done. I have said that diagnosis has approached nearer an exact science during the past few years. This is true, but there are yet many problems in diagnosis as yet unsolved. A diagnosis is not complete until it includes an explanation of how the condition of affairs was produced. It is not enough, for example, to diagnose chronic Bright's disease. What is the cause which leads to the symptoms which enable the clinician to diagnose this disease? Is the cause always the same? Till these questions can be satisfactorily answered we cannot consider that a full and rational diagnosis has been made, and until this is done we need not expect that our treatment will be successful. Examples of what I mean by incomplete diagnosis might be multiplied. Permit me to refer to a few others.

By examination of the blood a differential diagnosis can definitely be made between Progressive Pernicious Anaemia and all other forms of Anaemia. But there we must go back one step further and determine what is the underlying cause which gives rise to this peculiar and fatal condition of the blood. So far our treatment must be symptomatic. We endeavour to overcome the perverted conditions found in the blood. Did we know the causal agent producing these changes we could with more hope of success direct our energies to counteracting or removing that cause. Again, we have no difficulty in diagnosing the condition known as Cancer. We are able even to differentiate a number of well defined varieties. But we must confess our inability so far to account for their production. Till we can do this our treatment will probably remain what for years it has

been—removal where possible, with an almost absolute certainty of return. Diabetes Mellitus is another example of the same thing. Epilepsy might also be cited as an example of a disease easily diagnosed clinically, but whose cause has not as yet been determined, unless we except the Jacksonian variety. Examples of what I mean might be increased. Let these suffice. Here, then, is a field for future investigators. We rely upon the pathologist and the bacteriologist to clear up our uncertainties regarding the primal causes of these and other as yet not fully understood diseased conditions. When these primal causes are clearly made out then we may expect the therapeutist to come to the relief of those suffering from these diseases. Then the therapeutist will be fighting a fair fight. At present he is, as it were, waging a desultory warfare against the enemy's outposts—the symptoms. Then he will be in a position to direct his energies against these enemies of mankind at their headquarters—the primal causes.

Much yet also remains to be done in the realm of prophylaxis. Judging from the figures submitted the most deadly foe of the human race is Tuberculosis. Notwithstanding this fact, less effort has been made to stay its ravages than in the case of most of the infectious diseases. Fortunately, however, the profession has awakened to the necessity of attempting to hold in check this dread destroyer of human life, and, as a consequence, the public are beginning to take an intelligent interest in the matter. Tuberculosis does not confine its fatal influence to mankind, but our domestic animals are also claimed as its victims. This is true especially of the cow. Here it is that the first efforts to stem the progress of this disease have been made. It having been demonstrated that this disease spreads from one animal to another, the agriculturist has become alarmed and the destruction of animals so affected has been more or less systematically carried out. Suspected animals are isolated. Strange as it may appear, while the danger from man to man is as great at least as from animal to animal, and greater than from animal to man, no adequate measures of repression have as yet been taken to curtail its extension in this direction. Suspected animals are isolated, and those known to be affected are slaughtered in order to protect and save the rest of the herd, but the affected human

being is allowed full liberty to mix with his fellows and thus spread infection and destruction around. How different has been our course with regard to less deadly diseases. Take Erysipelas as an example. A few years ago patients suffering from this affection were placed in the general surgical wards of our hospitals. Its infectious nature was demonstrated, and now such cases are isolated. As a consequence the number of cases of Erysipelas complicating surgical cases in our hospitals has been decreased. Yet at no time did the average annual death rate for the period covered by the figures submitted exceed 111. How is it with Tuberculosis? A patient suffering from this disease, as I have said, is practically allowed full liberty to mix with his fellows, and in the majority of our hospitals, when he seeks relief there, he is placed in the general medical wards. Around and about him may be patients afflicted with Bronchitis or Pneumonia. The respiratory passages of such patients are in an irritable condition, the resisting power of their tissues is weakened, and they are fitly prepared for the reception of the bacillus of Tuberculosis. So long as the infectious nature of Tuberculosis was not demonstrated the authorities of our hospitals were, perhaps, not to be blamed. Now, however, by the profession this is regarded as a matter beyond dispute. The general public has been informed as to the true character of the disease and of its modes of extension from one to another. In the face of these well-established facts the authorities of any hospital who so place tuberculous patients alongside of other patients whose vitality is already lowered by disease must be open to the charge of ignorance or culpable indifference. I am pleased to say that many public institutions are now recognizing their responsibility in this matter, and are either refusing admission to tuberculous patients or are providing for them wards of isolation. To the credit of the Kingston General Hospital, be it said, the governors have recognized their duty and have adopted the principle that such patients should be isolated. But, alas! lack of funds have so far prevented them from carrying into effect their laudable and philanthropic ideas. Other institutions, as I have said, do provide for the isolation of such patients, and in a few places special institutions have been opened for tuberculous patients. It has, therefore, seemed to me that one of the great

problems before our profession in the future is how to limit the spread of this awful slayer of the human family. Knowing its methods of extension, knowing the vast number of its victims, we must set ourselves to educate the public to take all precautions against its spread. Once we make known its true character and its mode of extension, once we impress upon the public the enormity of this life-destroying influence, once we convince them that it is to a large extent a preventible disease, I am persuaded the public will adopt any reasonable and practical measures we may suggest for the limitation of its ravages.

I am fully aware that I have submitted nothing new. If, however, by reiterating well-known facts I have re-awakened your interest in the future diagnosis, treatment and prevention of disease, I will feel that my efforts have not been in vain.

Gentlemen, I thank you for your indulgent hearing.

JOHN HERALD.

IMPERFORATE HYMEN.

I HAD a case in July which I thought would be of interest to the QUARTERLY readers, and accordingly send you a short report.

My patient was a girl, aged fifteen, a farmer's daughter, of Danish parentage, living six miles from Dannebrog. When I first saw her temperature was normal, pulse eighty-five. She was complaining of very severe pelvic pain, intermittent in character, recurring at intervals of from five to ten minutes. She also had a continual desire to urinate, passing a few drops at a time, and there was slight tenderness in hypogastric region. She was fairly well developed, but had never menstruated; had always been healthy. During the present summer she had been troubled by occasional headache, and several times had some abdominal pain; somewhat severe a month earlier. For the past year or two she had at times a little difficulty in urinating. This was more usual in the colder weather. Her appetite had always been good, but her bowels were constipated. Examining the genital organs they appeared to be normal, but on separating

the labia there was no vaginal outlet whatever. The hymen was intact ; it was firm and resistent, and presented a median raphe ; there was no bulging whatever ; the distance between urethra and fourchette was small, being less than an inch.

Having prepared for operation the following day, examination under anaesthesia bimannually per rectum revealed that the uterus was present, tilted back into the hollow of the sacrum, less movable than normal, about the size of a four months' pregnancy, smooth, globular and somewhat firmer than the pregnant uterus. Having withdrawn four or five ounces of urine, I made a median incision through the hymen, finding it tough and resisting and several lines in thickness. Inserting my index finger it entered only half an inch, being contained in a pouch, with sound in the bladder and finger of assistant in the rectum. By means of a blunt-pointed scissors and fingers I worked through a series of these pockets, advancing slowly until the "os" was reached, the signal for which was a gush of thick, dark fluid of the tarry type, said to be characteristic of retained menses. Of this fluid there was one and a half pints. Having thoroughly separated all adhesions I douched the uterus with sterile water, then passed several long strips of iodoform gauze into the vagina, well up to the " os," leaving the ends protruding.

On the third day, under chloroform, her temperature being 100°, I changed the dressing and douched the vagina. Hereafter her recovery was uneventful, complaining only of some pain in her left leg and heel. The following month menstruation was normal. I was ably assisted in this and other surgical work by a graduate nurse of the K.G.H.

C. B. Dyde.

THE DISTRIBUTION OF ANTHRAX IN ONTARIO.

Read at the annual meeting of the Association of Executive Officers of Health of Ontario at London, September, 1899.

IN this province we are commencing to realize that Anthrax is not so uncommon a disease as has generally been believed. True, it has only been proven to exist in certain districts, but I am confident that were the matter carefully investigated it would be demonstrated that the present localizations would be found to occupy much too limited an area, and that some at least of those cases of rapidly fatal illness in cattle, looked upon as inflammation, dropsy, etc. (terms which to the scientific investigator mean nothing) would be found to be due to anthrax infection. I do not wish to be pessimistic in this connection, but the disease once seated is so hard to eradicate, and so rapid in its fatality that its occurrence, even sporadically, is a matter for serious consideration by sanitarians, dairymen and stock raisers. From the data already published by the Provincial Board of Health in their annual reports for 1887 and 1891 and '92, together with that collected by the Board this summer, and by myself, we are compelled to recognize the fact that the disease has gained a foothold in certain districts. When we consider the difficulty of its eradication, owing to the tenacity with which its causal agent clings to life and accommodates itself to almost any reasonably suitable environment, we will at the same time see the necessity for rigorous measures to prevent its further spread in the present recognized centres, and the taking of steps to prevent the seeding of other localities either from the infected areas or from those causes which first seeded the centres now infected.

Before considering the outbreaks with which we are acquainted in Ontario, a few general remarks on the nature of anthrax may not be out of the way. Anthrax attacks nearly all stock animals. Sheep, cattle and horses are most subject to attack, sheep being the most susceptible. Hogs, too, are attacked usually from eating the bodies of other animals dead of the disease. Dogs, cats and rats are fairly immune, yet not entirely so. Mice and guinea pigs are very susceptible.

Anthrax is one of the oldest of recognized diseases among cattle and is very widespread. In continental Europe, in India

and the Argentine it is very common. Compared with its prevalence in these countries it is uncommon in England, the United States and Canada.

Anthrax is due to a spore-bearing bacillus, first seen by Pollender in 1849 in the blood of sheep, but first described in 1850 by Davaine, who in 1863 claimed it to be the cause of the disease. His claims were fully established by the researches of Koch, who completely worked out the life history of this bacterium.

In the blood and tissues of animals dead of Anthrax we can demonstrate this bacillus usually in vast numbers. Here we find only the rod forms—not the spores—as these are formed only in the presence of oxygen. Thus opening of the body and skinning the animal determine the formation of numerous spores in the exposed organs and in the hide. The spores are quite resistant to external agencies such as heat and cold, but are readily killed by direct exposure to the sun's rays. Covered, the spores retain for long periods their vegetative power and virulence. In certain soils, with sufficient moisture and summer heat, the spores germinate into rods, which rapidly increase in numbers and again sporulate and so add vastly to the numbers of anthrax spores in the soil. From infected soil or material the spores are carried by water along the water courses, lodging in the soil of the bank or on overflowed ground, there either to be destroyed, lie latent, or to germinate, according to enviroment. Consequently, we find the disease most common on lands low lying and along water courses, and possessed of a rich mould with good vegetation, as these are the most favourable conditions for its existence, once infection has occurred.

Anthrax is not a disease contagious from animal to animal. Infection is mainly from the soil, rarely from water and may be either by local inoculation which is uncommon, or take the usual course by infection through the digestive tract by the taking in of food or water containing the spores. As might be expected the disease will be most common on infected soils when these are close cropped by the animals.

In the common form of intestinal infection the disease is usually a rapidly fatal one—at least 80 per cent. of the animals die. Death in the majority of cases occurs within 48 hours,

often within 4 hours after the animal is noted to be ill. In the form due to inoculation we have local carbuncle formation with a rapidly spreading gelatinous, at times hæmorrhagic œdema soon involving the nearest lymph glands, and then terminating in septicæmia. In throat inoculation the local œdema at times suffocates before blood infection occurs. Death in nearly all cases occurs within 6 days.

It would be of no value to recite the symptoms met with further than to say that late in the disease bloody discharges may issue from the body orifices and in these anthrax bacilli can usually be readily demonstrated. Hence such discharges may add to the infection of the field or stable in which the animal is ill. The post-mortem appearances while fairly characteristic to a trained eye are often misleading to one not so skilled, so that in all suspicious cases specimens of the blood and tissues should be examined microscopically and bacteriologically for the bacillus. Its presence or absence must be the criterion upon which to base the positive diagnosis of the disease.

Here in Ontario we have at present recognized four centres, where anthrax has been proven to exist viz.—Guelph, Acton, Listowel and Kingston. Accounts of the outbreaks at Guelph and Acton will be found in the reports of the Provincial Board for 1887 and for 1891-2 respectively. In Ontario the disease seems first to have been recognized on the flat lands along the Speed below Guelph between 40 and 50 animals dying there during the summers of 1886 and 1887. The source of infection hinted at in the Board's report was infection from some foreign wool used in the woollen mills at Guelph, the washings from which make their way into the river above the infected flats.

The next outbreak we find noted is at Acton in 1891 and 1892 and evidence was furnished before a committee of the Provincial Board that connected the disease with that locality as far back as 35 years. Here we find that the disease occurred along the low lands lying near a stream into wnich the washings from several tanneries had emptied for over 35 years. In one of these tanneries South American hides were used and we know anthrax is common there, particularly in the Argentine. This summer we have had two outbreaks, one at Listowel, and one at Kingston on two farms some distance apart.

I have had the correspondence re the Listowel outbreak kindly placed at my disposal by Dr. Bryce. At Listowel there is evidence of the existence of the disease for the past few years but only this summer was the disease definitely recognized as anthrax aud positive proof afforded by a bacteriological examination. The correspondence in this outbreak shows what I found to be the case in the Kingston outbreak viz, a disagreement between the veterinaries as to the nature of the disease—one tracing the trouble to polluted water directly and the other calling it anthrax. In Kingston it was variously termed "weed poisoning," arsenic poisoning, acute peritonitis and pleuritis, inflammatory dopsy and several other probabilities. At Listowel the cases occurred on lands bordering a creek into which the washings from both a tannery and woollen mill emptied. No note is made as to the source of wool or hides used.

At Kingston we have, this summer, had cases on two farms. On one of these the disease has occurred annually for 11 years at least (owner, young man—far back as he remembers). On the other the cases which occurred this summer are the first definitely known. On the first farm the disease was noted first in animals pastured on a point of land across the road from the main farm, this point being now Lake Ontario Park. This summer some of the cases occurred on animals pastured there, others in cattle kept on main farm. The dead animals were thrown into a deep crevasse in a limestone ridge which crosses the main farm. This crevasse drains out on several acres of flat pasture land and then crosses in a ditch the cultivated field of a neighbor to enter Little Cataraqui Bay. There is no doubt that this pasture land at the foot of the ridge is infected. As to the probable source of the infection it is hard now to say definitely though the seeding I think arose from a tannery which stood on a bay into which empties the Little Cataraqui creek. This tannery has not been operated for 25 years however but I understand was a large one and used foreign hides. The current in this bay sets from the creek toward Lake Ontario point, and the shore on this side is partly marshy while the opposite bay shore is somewhat bluff and rocky. This latter point would account for the fact that anthrax is not known to exist on the opposite bay shore.

On the second farm I must confess that I am yet at sea, in

ascribing a cause for the seeding of the farm. The farm lies about ½ mile away from the first and across the Little Cararaqui but not on its banks. The infected field is low lying, somewhat marshy, but is not flooded from the creek. I can learn of no communication between the farms but I have not had the time nor opportunity of carefully investigating the matter.

On the first farm, during the last eleven years, 42 head of cattle have died with a sudden and rapidly fatal illness, and I ascribe the deaths occurring previous to this year to anthrax, as was the case in the five cows and one horse which died this year. Only one of the cows attacked this year recovered. On the other farm four cows and one horse have died. I had an opportunity of examining one of the cows during the illness and post-mortem, and saw both the horses post-mortem. All presented the typical post-mortem appearance of septicæmia by intestinal infection with anthrax, viz., Haemorrhages in skin and internal organs—all serous cavities containing bloody serum. (One horse showed ten gallons of this in abdomen.) Omentum and mesentery the seat of a gelatinous œdema, in places, however, both were intensely hæmorrhagic. The intestinal walls swollen and dotted with haemorrhages punctate, linear, and sheet-like. Spleen large, dark, and surface dotted over with haemorrhages. Urine bloody. Heart and lungs also dotted with haemorrhages and blood dark. Anthrax bacilli were readily demonstrated in all the organs.

No fatal cases have so far been recognized in man. A number of cases have occurred in those handling the dead animals, and in the tanneries, but so far all have recovered so far as known.

On looking over the factors in common of these outbreaks we find that we can point as probable source either to woollen mills or more commonly tanneries. The tanneries are the only factors in the Acton and Kingston outbreaks. Both are combined in the Listowel outbreak, while woollen mills appear alone in the Guelph cases. The wool and hides used were partially derived from foreign sources, and hence might readily be infected with anthrax spores.

Ravenel, in a paper read by title before the American Public Health Association meeting in Ottawa last September, traces

three outbreaks of anthrax occurring in Pennsylvania during 1897, and attacking the operatives in tanneries and the cattle pastured along streams which received the tannery washings. Ravenel further shows that the dry hides as received are the most dangerous, probably from the greater danger of scratching with such, as no scratching would occur with the moistened hides. Ravenel's experiments show that the tanning process does not suffice to kill anthrax spores. Certain German investigators have also pointed out the dangers of infection from tanneries and of the men engaged in the process.

Now these observations and experiments of Ravenel, together with the observations gathered by the Provincial Board, prove clearly the connection between tanneries using foreign or suspicious hides and seeding with anthrax. What would apply to the tanneries would apply as well to woolen mills using wool from infected countries. We must look then to tanneries and woolen mills using such material as the source of infection with anthrax.

In conclusion I would say that we must take measures, 1st, to prevent further seeding from these outside sources ; 2nd, to root out the disease in the now infected local areas.

For the first we must have (1) some system of control over the importation of hides and wool, particularly from infected countries. Absolute prohibition of import would be advisable at least till some efficient means of disinfection of these materials is devised.

(2) The washings from tanneries and woollen mills should be collected and treated before being allowed to flow into streams.

In rooting out the disease locally the following measures are advised :

(1) Exclusion of cattle from infected fields and the placing of these fields under cultivation for some years, best with crops requiring considerable stirring of the soil.

(2) The bodies of all animals dead of anthrax should be burned. Burial will not suffice, as it has been shown that any spores formed may be brought to the surface by earthworms and so infect the surface soil.

(3) During the attack the animals should be isolated, say in a rough paddock littered with straw. All litter should be burned.

(4) If the disease becomes endemic the introduction of Pasteur's vaccination system or a modification of it might be considered.

At present however, there does not seem to me to be sufficient reason for the introduction of this prophylactic measure as the disease can be controlled by the steps before advised and vaccination is somewhat costly and not in itself free from danger.

W. T. CONNELL.

NOTES ON THE USE OF NORMAL SALT SOLUTION.

IT has been well said, that "There are no more interesting studies, in medicine or surgery, than those advances which meet conditions heretofore considered beyond relief," and we believe it may be said that there is no one remedy known to medical science so generally useful in relieving these extreme conditions as normal salt solution. The principle is by no means new; it is as old as is the practice of medicine for the relief of human ills. If we trace the history of the infusion of fluids into the blood it takes us far back, through the ancient records of Egypt, and yet it is only within the decade now closing that this principle has attained to any degree of prominence, as a valuable life-saving measure.

To-day as we witness the effects produced upon the various functions of the human organism, by the infusion of normal salt solution; as we stand by the bedside of moribund patients and watch them slowly, yet surely, regaining their hold upon life, in response to its action, we are led to ask—why has it taken so long to develop and establish the use of this remedy?

Two reasons may be suggested: First, the physiological effects of infusion of fluids were not understood. Second, the methods employed were painful, were dangerous and required special apparatus. The early advocates of infusion did not know the value of any fluid except blood; hence they practised direct transfusion, or else collected the blood of the donor in a dish and infused it into the veins of the patient. It is easy to under-

stand why these methods, instead of becoming popular, gradually fell into disuse. The first real advance made was when the chemical analysis of the blood, prepared the way for the synthetical preparation of a substitute known as *artificial serum*, containing the essential salts of the blood, with albumin in the same proportion as in the blood. This artificial serum, being easily made, was freely used in the irrigation of wounds, for irrigating the peritoneal cavity and for infusion into the veins of patients in the collapse of cholera, but so long as it was deemed necessary to infuse the fluid directly into the veins of a patient, so long was its general use limited. Hunter, Goltz and others finally cleared away the mist that obscured the principle of infusing liquids and pervented its adoption when they established the following facts: 1st, that death from loss of blood was really due to loss of *liquid* from the vascular system, hence might be replaced by any suitable fluid. 2nd, that the value of transfused blood is almost solely physical and dependent upon its volume. 3rd, that all the advantages of transfused blood can be more readily and safely obtained by the use of normal salt solution. 4th, that in all cases when the circulation is progressing and absorption possible the solution may be injected into the cellular tissues, or into the rectum, with as much benefit to the patient as when infused into the veins.

With a more exact knowledge of its effects and more rational methods of applying the remedy, the indications for its use have multiplied until at the present time it is considered indispensable alike, to the physician, the surgeon, and the obstetrician. The term normal salt solution, as used in medical literature, signifies six parts sodium chloride dissolved in one thousand parts of sterile water. The ready-method of dissolving a teaspoonful of salt in a pint of sterile water at 105° F. is near enough for all practical purposes.

The Physiological effects of normal salt solution so far determined, are as follows;—1st. The volume of the blood and the number of red corpuscles are increased. 2nd. The arterial tension is raised and the density of the blood lessened. 3rd. The nerve centres are all stimulated and the circulation improved. 4th. The body temperature is raised and the production of antitoxins increased. 5th. Toxins and other waste products are

dissolved and diluted. 6th. Osmosis is excited and the action of the skin, kidneys and intestines greatly increased.

The therapeutic value of salt solution is not limited to any one department; in uræmia, diabetic coma, typhoid and scarlet fevers, diphtheria, after the ingestion of poisons, vegetable or mineral, in all conditions depending upon the accumulation of toxins in the system; the most rational and the most successful treatment is to take away as much as possible of the poisoned blood and replace it with a sterile fluid. In so doing you remove a large amount of poison—relieve pulmonary congestion and embarrassed heart action; you refill the blood vessels and stimulate the circulation; you increase the action of the kidneys and other excretory organs; you dilute any poison remaining in the system and lessen its deadly effects on the vital centres. When the vascular system is depleted as in cholera, hæmoptysis and after typhoid hemorrhages, etc., the physician finds salt solution his most efficient remedy.

The post-operative conditions which may call for prompt relief are haemorrhage, shock, sepsis, intestinal obstruction and renal insufficiency and in all of these the immediate use of salt solution is indicated. In cases of extreme shock with general vasomotor paresis and loss of tone throughout the vascular system, the blood accumulates in the large veins of the abdominal viscera, the heart action becomes feeble because there is not enough blood in it to stimulate contraction; drugs are useless in this condition for they cannot be absorbed; saline solution infused into the veins will supply the normal stimulus to the heart and restore the patient.

In puerperal sepsis small quantities, say 300 to 500 cubic centimetres, injected into the cellular tissue under each breast and repeated at intervals of an hour produce better results than if a large quantity be given at once. In puerperal eclampsia the most recent treatment is to withdraw a pint or more of blood and infuse a like qnantity of salt solution into the veins or double the quantity subcutaneously. After a severe post-partum hæmorrhage, the infusion of salt solution is imperative and the obstetrician who neglected to use it, in such a case, should be indicted for mal-practice.

The ordinary methods of using salt solution are, intra-ve-

nous, intra-peritoneal, sub-cutaneous and by rectal enema. Some of these methods have a wide range of usefulness, others are limited to special cases. The conditions to be treated must for each case determine the route to be chosen. In medical, surgical or obstetrical cases where time is not important, circulation and other conditions favorable for absorption, the rectal and subcutaneous methods have many advantages,—required apparatus is simple—quickly done—not painful—no cutting—no wound to be dressed—no danger of forcing air into the veins. For these methods a Davidson or fountain syringe is required, having a rectal tube or a large rubber catheter attached for rectal and an aspirating needle for subcutaneous injection. The needle filled with solution may be inserted into the loose cellular tissue of the iliac region, the axilla or under the breast in the female, and the solution allowed to flow in slowly. In urgent cases, following haemorrhage, or in severe shock the intra-venous route should be given the preference, being the quickest, the surest and the most direct for applying heat to the cardiac and other vital centres.

The apparatus required for intra-venous injection will be, a small canula one eighth inch in diameter curved at the tip, three or four feet of rubber tubing attached to a glass funnel, a bottle or douche bag, a scalpel tissue forceps, aneurism needle, fine silk ligatures, and a bandage. The arm is extended, cleansed and a bandage tied firmly around the middle third to distend the veins, the median basilic or cephalic vein is exposed by an oblique incision one inch long, and the vessel ligatured at the lower end of the incision, the wall of the vein is now picked up with forceps and a V shaped incision made half way through the vein the canula is filled with solution and pressed into the lumen of the vessel about half an inch in the direction of the venous flow, and a silk ligature placed around the vein so as to hold the canula in place, the bandage is removed and the solution allowed to flow in slowly until the pulse indicates that enough has been given, then the canula is removed, the vein closed by the ligature and the wound dressed.

The abdominal surgeon uses salt solution for irrigation and in suitable cases may close up in the peritoneal cavity one or more litres of the solution ;—to dissolve and dilute any blood clots thus promoting their absorption :—to prevent adhesions by keep-

ing raw surfaces separate and free ;—to reduce shock by refilling the blood vessels and by imparting heat directly to the great vital centres.

As in all other operative work accuracy and care must be exercised in the administration of salt solution to secure the best results. The solution should be standard strength—six parts to one thousand—absolutely sterile, except when used per rectum, and should reach the tissues at a temperature not less than 110° F. The storage vessels, apparatus, etc., must be carefully sterilized and the field of operation rendered aseptic. The rate of infusion into the veins must be adjusted so as not to exceed one ounce per minute and not more than 500 cubic centimetres should be injected into the cellular tissue, through any one puncture, lest the pressure cause necrosis. Absorption usually takes place in about 15 minutes, but in toxic cases absorption and elimination are relatively slow, hence the quantity of fluid injected should be small. The total quantity of fluid to be given will depend upon the nature of the case. As a rule double the quantity may be injected into the cellular tissue that would be infused into a vein and two litres or even more may be given per enema.

The elimination of salt solution takes place through all the excretory organs, with respect to relative time and quantity from the kidneys, the skin, the intestines and the lungs in the order named.

While salt solution is so generally useful and its therapeutic range rapidly extending yet it should not be used in the following conditions,—first, when the functions of the heart have been impaired by valvular lesions, myocarditis, pericarditis with effusion or degeneration of the heart muscles. Second, when the blood vessels are diseased or weakened as in arterio-sclerosis, atheroma, etc. Third, in certain diatheses of the blood with deficient fibrin and tendency to haemorrhage, as in pernicious anæmia, scorbutus, hæmophilia, etc. Fourth, when the circulation is impeded or obstructed as in partial consolidation of the lungs, malignant or sclerotic disease of the kidneys or liver, thrombosis or apoplexy. Fifth, during the progress of severe haemorrhage especially if from large vessels.

When used in excess or in unsuitable cases it may induce œdema of the lungs, dyspnoena, enlargement of the spleen with

severe pain, mental excitement, vertigo, somnolence, headache, flushed face, chills, high temperature, etc. Classie tells us that when a large quantity of saline solution is used and especially in septic cases, the patient may pass through what he terms "the critical stage" as follows: A short time after the injection of the fluid the patient feels a cold sensation going on to a violent chill; the pulse is rapid, full; temperature runs up to 104 or 105 ° F. Within an hour reaction sets in, patient feels hot, face flushed, respiration labored; soon perspiration begins to pour through the skin; the kidneys act freely; the general condition improves; temperature sinks to normal and convalescence is established.

ISAAC WOOD.

EXSECTION OF HEPATIC TISSUE.

(Extract from a paper read at a meeting of the Kingston Medical Society, Oct. 2nd, 1899.)

THE dog I present to you to-night, is one on whom I operated about a week ago, removing a portion of its liver. It rested quietly for about forty-eight hours after the operation, but since then has been active and apparently well. I used the silk ligature as devised by Ferris and Auvray, and modified by Thompson of Galveston. There have been seventy-six cases of resection of the liver for hepatic tumor reported. The great danger during the operation is from hemorrhage, and a variety of methods have been employed to prevent its occurrence, such as silk ligature, elastic ligature, thermocautery, &c. Keen reported in the last issue of *Annals of Surgery*, a case operated on successfully by the latter method, but it seems to me, that an operator not so experienced as he, would feel safer with the more certain method of controlling hemorrhage, offered by the ligature as used by Ferris and Auvray. When the ligature is tightened it sinks so

much into the hepatic tissue, that one expects to see it cut through, but I have not found such to occur in my experiments.

The hæmorrhage, should it occur, would be from the hepatic veins as these are patulous, large, and valveless, and it can be readily seen how unpleasant cutting into one would be, but fortunately they possess very strong walls.

There are three main veins in the liver, one bringing the blood from the left lobe, one from the right, and one from the latter and lobulus Spigelii. On the right extremity the main vein has a large branch, that supplies the dome-like portion of its upper surface. The veins of the left lobe are smaller than those of the right, and all these veins, except the one of the dome referred to, lie much nearer the lower than the upper surface of the liver.

In size I found that $\frac{1}{2}$ inch from the anterior margin of the right lobe they averaged 1-15 inch in diameter. 1 inch, 1-10, $1\frac{1}{2}$ inches, 1-6, 2 inches, 1-5.

It required a vein 1-15 inches at least, in diameter, to give strength to the ligated tissue. for though the serous and fibrous coats, with the delicate areolar tissue between the lobules—projections of Glisson's capsule, would collectively offer some resistance to the ligature, yet the presence of a vein of say 1-15 inch in diameter, added so much to the strength of the tissues, that, whereas in the former it required only about six pounds weight to tear out the ligature, in the latter it took eighteen pounds. Not only are the veins nearer the inferior than the superior surface, but their direction is obliquely upwards, hence, if I might, I would suggest the introduction of the needle from above, since the serous coat resists the introduction of the blunt needle, and inasmuch as the veins lie only about 1-5 inch from the inferior surface, towards the anterior aspect of liver, the sudden introduction of the needle passing with a jar through the serous coat, might penetrate a vein, and if it did the subsequent tightening of the ligature would hold the vein open and allow free bleeding, whereas, if introduced from above, and having to traverse a considerable portion of liver tissue before contact with a vein of sufficient size, the sudden impact would be lost, and the danger of penetration nil.

D. E. MUNDELL.

"INDIGESTION."

IN choosing "indigestion" as a heading for the few following remarks I do not intend to treat so broad a subject as the term implies. "Indigestion" is a lay expression of considerable ambiguity, very often however designating a group of symptoms referable to the stomach which though having troubled the patient for some time are not severe enough to convey any impression of the real gravity of the condition present. This condition corresponds to (early) chronic gastritis or subacute inflammation of the mucous membrane of the stomach. My observations will be limited to this class of cases.

Unfortunately a large percentage of such cases deem the trouble so trifling that they do not consult a physician until too late, and undoubtedly a number of those who do seek advice are assured that the condition is of no importance. The patient's evidence of;—"symtoms having lasted for a few months or it may be a year or more" is sufficient to call for a thorough scientific examination and a systematic course of treatment.

Let us take a typical case;—a patient presents himself for examination. He tells us that he has had stomach trouble for some time. At times he expectorates large quantities of "mucus." Some articles of food do not agree with him. After eating quite often there is a sense of fulness and epigastric distress. He does not sleep well. His appetite varies,—sometimes he is almost ravenous while very often food is distasteful. This is the average symptomatology which the patient sums up in one word "indigestion." Will it be sufficient to attribute these symptoms to a mere functional derangement and then turn our patient away with perhaps a simple stomachic etc., assuring him that his stomach is "just a little out of order"? Let us look more deeply into the condition. Let us examine the stomach contents and we find serious defects in the composition of the gastric juice—defects too significant to depend upon mere functional disturbance but which arise from distinct pathological changes in the gastric mucous membrane.

Let us consider briefly these pathological changes: Since the obsevations of Beaumont upon St. Martin we recognize in-

flammation of the lining membrane of the stomach in the main analogous to that of any other part of the body. Therefore we have in these early cases of gastritis :—1. Dilatation of the blood-vessels. 2. Exudation of leucocytes and serum into the lymph spaces. 3. A swollen and granular condition of the gland cells both peptic and pyloric. This constitutes redness and swelling which may be (*a*) localized (*b*) general. There is also disturbance of function. The gastric mucous membrane is provided with two species of glands,—(*a*) peptic (*b*) pyloric, the function of the former being to secrete pepsin with a small percentage of HCl that of the latter being to secrete mucus. Now there is an important feature which distinguishes inflammation of the mucous glands from that of the peptic variety, viz ;—while in the latter the disturbance in function consists in a diminution or arrest of secretion in the former there is increased secretion. Pain, which is a symptom of most inflammations is very often absent in sub-acute inflammatory conditions of the stomach. This is explained by the anatomical fact that the lining of the stomach is poorly supplied with sensory nerves. Experiments with strong solutions of tartaric acid when swallowed produce pain just as the solution is passing through the æsophageal opening and then again in an hour or so when presumably the solution is passing through the pyloric orifice demonstrating the comparative lack of sensibility of the fundus.

If we examine post-mortem a mucous membrane which has undergone inflammation of this early character we do not gain much information. In fact with the exception of being somewhat paler it cannot be distinguished from normal mucous membrane. We then have an inflammatory lesion in which as yet no permanent or organic changes have taken place ; *i. e.* during life, capable of resolution and it is the duty of the physician to recognize this and assist nature in its accomplishment.

In what way will such a condition of the mucous membrane affect the gastric secretion? Ewald's test breakfast was prescribed in my cases. In an hour the stomach contents were withdrawn. Analyses were made, the average result of which proved to be—1.—diminution of HCl and in some cases total HCl anacidity ; 2.—hyperacidity of the organic acids ; 3.—mucus in large quantities ; 4.—delayed motility and defective absorption ;

5.—no appreciable dilatation. The terms hyperacidity and anacidity are used in connection with both HCl and the organic or volatile acids. For example ;—in ulcer of the stomach we have HCl hyperacidity and volatile anacidity whereas in the cases I am describing we notice as above HCl anacidity and volatile hyperacidity. It has been pretty well confirmed by G. Hoppe-Seyler and later by Drs. Leney and Vaughan Harley (*British Medical Journal, May 27th*, '99) that the quantity of organic acids present in the stomach is in inverse ratio to that of HCl. After an experimental inquiry into a large number of cases they arrived at the following conditions :—

(*a*) Organic acids exist in the normal stomach.

(*b*) That with diminished secretion of HCl, organic acids appeared in greater amounts.

(*c*) That with delayed motility there was also increase of organic acids.

(*d*) That when both conditions existed simultaneously organic hyperacidity was still more marked.

Again bacteriological investigation has proven that HCl is the great antiseptic of the stomach and that in its absence or diminution various organisms concerned in the process of fermentation find a favorable nidus for growth and multiplication. Such bacteria comprise B. lactis acidus, B. butyricus, B. lactis aerogenes, B. mycoides, very often B. Coli, the sarcinae, and the yeasts.

I will refer collectively to some half dozen cases which were under my care during the past winter. With one exception these six cases were young, ranging from twenty to thirty years of age. They dated their stomach trouble within two years, except one, who stated that he had had indigestion for "years." Histories good; no rheumatic, tubercular, neurotic or albumunuric tendencies. All enjoyed fairly robust health, except for the slight discomfort after eating. Distress due to fermentation was a prominent symptom given by all after ingestion, especially of starches and sugars. Two complained of expectorating large quantities of "mucus." Pain was not a prominent feature of these cases. Appetite in all variable. Tongue usually coated with a yellowish white debris. In one case this was very persistent, but finally cleared. They generally complained of a bad

taste in the mouth. Bowels in some cases regular; tendency, however, to atony.

Examination, including results of analyses of stomach contents, as described earlier in this paper.

Diagnosis—Early chronic or subacute gastritis.

Treatment—Dietetic: These patients, on the whole, were allowed a generous diet, certain restrictions being placed upon such articles as fresh bread, pastries, fat meats, highly seasoned consommes, and salads. Strong tea and coffee were also prohibited, together with all forms of spirituous beverages in excess. They were cautioned against eating their food too hot and were directed to eat regularly and moderately, and, above all, to thoroughly masticate their food. To impress the great importance of the latter I sometimes quoted the maxim of German origin: "Food well chewed is half digested," or a "chew for every tooth." Medicinal: In all cases in which there was marked diminution or arrest of HCl, Acid Hydrochloric Dil. in fifteen minim doses was prescribed, along with Tinct. Nux. Vom. and glycerine after each meal. Lavage with warm sterile water (or with warm dilute solutions of Boric acid when fermentation was a marked feature) was carried out three times a week. In washing out the stomach I repeated the Lavage until the solution came away quite clear, and before withdrawing the tube was careful not to leave any fluid in the stomach.

Results.—In five of these cases who took the treatment with fair regularity for nearly three months the results were most encouraging. Three of them say that they are perfectly well, and the remaining two state that they have noticed marked improvement. These are only a few examples of many equally signal results which I had the opportunity of observing during my residence at the Kingston General Hospital.

Conclusions.

I. Stomach troubles of any degree of chronicity demand scientific investigation.

II. Such terms as "fermentative," "amylaceous," and "acid" dyspepsias do not designate separate pathological processes in the stomach. They are merely descriptive of symptoms dependent on the one condition, that of inflammation.

III. This being true our therapeusis should be directed,

first, to the restoration of the glands to the normal state, thus reviving the secretion of HCl, and by so doing removing the cause of those disagreeable symptoms—fermentation, acid eructations, etc.

IV. That the best means for restoring the gastric glands are lavage and the use of Acid Hydrochloric Dil., as described before, and not the use of alkalies and carminatives, which at best will be found to be but palliative in their effect.

GORDON W. MYLKS.

TRAUMATIC RUPTURE OF THE BILE DUCT.

AN exceedingly interesting case of rupture of the bile duct, the result of indirect violence, came under observation a year ago last June. Undoubtedly accidents of this kind are exceedingly rare, if one may judge by the meagre literature on the subject to be found in text-books, medical periodicals, or other media, and when one comes to study the clinical history of this case one cannot look upon it as other than a case of extreme rarity, if it does not stand almost unique when viewed from its varied standpoints. Accordingly I make no apologies for offering a rather detailed account of it. In summing up the early history of the case I cannot do better than quote the notes of the medical attendant, Dr. G. F.Emery, of Gananoque, who kindly forwarded them to me at my request.

"———, aged 21, a strong, muscular and well developed young farmer, on the 2nd day of June, 1898, while tearing down an old barn fell with a heavy beam on his shoulder, striking his abdomen across the beam upon which he had been standing, the one on his shoulder sliding down his back and exerting its force directly opposite the anterior blow. With a little assistance he was able to walk to his home, a few rods distant. The accident occurred immediately after dinner, and when I saw him four hours later found him considerably shocked, his face pale and pinched, and with a cold clammy perspiration. He suffered much pain, which was referred to a point midway between the

ninth costal cartilage on the right side and the umbilicus. Temperature 97 ° F.; pulse 70, full and strong.

"A reddened skin over the margin of the liver in the right hypochondriac region and extending horizontally across the abdomen marked the location of the blow in front, while a corresponding bruise posteriorly, but to the left and extending outward in that direction, located the blow behind.

"The evidences of shock had been much greater two hours before, but at the time of seeing him there were no symptoms of hæmorrhage. A hypodermic of morphia was given, and the patient made in every way as comfortable as possible.

"June 3rd.—There was marked soreness and tenderness over the abdomen, greatest in the right hypochondriac region; temperature 99 °; pulse 74; urine had been voided and was normal in appearance.

"June. 4.—Temperature 101 °; pulse 78. Considerable tympanites, and pain all over the abdomen due to over-distention. The bowels were washed out by enemata, turpentine stupes applied and repeated and ten drop doses of spirits of turpentine prescribed; after second dose there were free evacuations, and with them much flatus was expelled.

"June 5.—The patient was feeling much better, free from pain; temperature 99.8 °; pulse 76; tympanites moderate; the urine natural in quantity and frequency.

"June 6.—The patient was much improved; tympanites gone; temperature 99 °; pulse 76; bowels moving naturally; urine normal and patient expressing a desire to leave his bed.

"As he lived a long distance from my residence I ceased calling on him. Still with misgivings that there might be some internal injury I instructed his friends to keep me informed as to his condition. All reports were favourable until the night of June 12th, when I was called to see him and found him suffering from severe epigastric pain, and his abdomen was distended with ascitic fluid, which showed on using the hypodermic needle to be composed of bile and serum.

"June 13.—I used the aspirator this morning and removed six quarts of yellowish-green fluid from the abdomen, and the diagnosis was accordingly made of rupture of the gall bladder. The patient's skin was at this time showing a very slight icteric

tint, and the movements were decidedly light in color. Laparotomy was advised, but the friends decided not to accept the advice at present anyway.

"June 17.—Four quarts more of fluid were removed by aspiration again to-day, having the same characteristics as that removed on the 13th."

June 20.—On this day I saw the young man for the first time in consultation with Dr. Emery and witnessed him draw off with a trocar inserted in the left iliac region four quarts more, making sixteen quarts in all. The parents were earnestly entreated to give their son the only chance for life by operation, and finally they were persuaded to remove him to the Kingston General Hospital. I may say that at this time he was going in and out of the house and expressed himself as suffering no particular inconvenience, but his general appearance was pinched and worn, and was more sallow than icteroid.

On June 22nd, under chloroform anæsthesia, the usual incision for operations on the gall bladder was made, and on entering the peritoneal cavity quantities of green fluid poured out, amounting in all to something over four quarts. The opening was enlarged and the abdominal cavity flushed out with normal salt solution. The hand was next inserted and adhesions were everywhere found to exist, the intestines being more or less adherent to each other and to the anterior abdominal wall. The anatomical relations of the organs and structures brought into view through the large incision were difficult to make out owing to displacements from over-distention by fluids and flatus, and to their retention in their altered positions by adhesions. The characteristic appearance also of the structures was wholly changed by most pronounced bile staining. The hand passed up to where the under surface of the liver should be found was met by what felt like ruptured and broken down liver tissue. After more thorough breaking up and separation of adhesions the altered anatomical relations were made out. The transverse colon was pasted against the anterior abdominal wall above the upper angle of the incision, and about opposite the lower margin of the ribs. The structure which simulated liver tissue was the transverse mesocolon thickly studded with fat lobules and profusely stained with bile. After these had been carefully separated

and drawn down, the liver was found far back and packed down against the spinal column and crura of the diaphragm, whilst its upper surface was pasted to the under surface of the vaulted diaphragm. The gall bladder was empty, retracted and intact; the cystic duct was also entire, but yellowish bile, now seen for the first time, kept oozing up from the back part of the liver. On passing the finger backwards in the direction of the foramen of Winslow bile welled up from about it. By means of an aspirating needle and bulb syringe air was forced into the gall bladder, the effect of which was to cause bubbles to rise up by the side of the finger. An effort was made to locate the exact point from which the bubbles issued, but it failed. However, the method adopted, aided by reflected light, was significant of the locality of the rent, and that it probably existed at the back of the upper part of the common bile duct as it passes downwards and to the left between the two layers of the lesser omentum. Thus satisfied as to the locality of the rent further attempts at finding the opening, much less at closing it, seemed by all odds too hazardous an undertaking, more especially as the patient had already been under chloroform for two hours and a half, and was showing evident signs of rapidly failing powers. A funnel-shaped tract down to the part corresponding to the foramen of Winslow, and to the point from which the bile oozed up, was walled off from the general peritoneal cavity by means of plain gauze, and a large drainage tube inserted.

What the cause was which led to rupture must remain a matter for debate; whether it was produced by the force of the blow on the gall bladder, at this time distended with bile, and communicated according to the law of hydrostatics through it and along the cystic duct to its distal end and there spent upon the posterior wall of the common bile duct; or whether the duct was forcibly pressed against the sharp edge of the body of an adjacent vertebra, can only be conjectured. That the rupture was a large one, and that the whole amount of bile secreted escaped into the general abdominal cavity, is proved by the amount of fluid removed, even after allowing for the ascitic fluid, which always seems to be an accompaniment of such accidents after they have existed for a few days. Specimens taken from the fluid drawn on the 20th, and at

the time of operation, were examined by Dr. W. T. Connell, Pathologist, and he reported as follows:—"The fluid proves to be largely bile, but rather watery. There is *a small* amount of albumen, due to the usual serous effusion in such cases."

The post-operative history, taken from the bedside notes, is a very varied one, but nevertheless interesting. The bowels were moved on the third day by means of an enema, the movement being semi-solid and of a *milky color*. From this on they moved fairly regular, being stimulated when necessary by a cathartic or an enema. In every case the color was reported as milky or clay-colored, until the ninth day, when it was "semi-solid and yellowish." On the eleventh day the movements were again reported *white* and later *cream-color*. On the fourteenth day they were "decidedly yellow." On the twentieth day "semi-solid and much darker than usual," and from that on the reports show a gradual improvement until the patient left the hospital on the twenty-eighth day, when the movements were reported "quite natural."

For the first few days he retained his nourishment well, but on the sixth day the stomach rejected all food and continued to do so until the tenth day. During the first two days the pulse remained between 86 and 104, but on the third day it went rapidly up, hovering between 125 and 135, and remained so for several days. Nervousness, restlessness and irritability of temper were prominent symptoms throughout, especially during the earlier periods, while progressive emaciation, accompanied by a peculiar sallow look, was plainly evident from day to day. The urine at first showed the presence of bile, but it disappeared after the fifth day. The discharge of bile from the wound was most profuse. There were no means at hand of estimating the amount, but thick, heavy dressings had to be changed quite frequently to keep the patient comfortable. There was nothing worth noticing in the temperature. It was normal at time of operation, but there was a gradual evening rise until the twelfth day, reaching on that day 102.5° F., after which it gradually subsided.

On the fifth day the gauze was withdrawn from the wound, and the drainage tube, surrounded with some windings of gauze, re-inserted. As the wound closed in the discharge became less, so that on the tenth day there was a marked diminution in the

quantity. This progressive diminution continued until the day of his discharge from the hospital, at which time there was but slight staining of the dressings and the wound would permit of the entrance of two fingers only. One month later he was reported as rapidly increasing in weight, his appetite good, the movements from the bowels natural and well formed. A few days later, when I saw him, the opening in the side was about the size of a lead pencil and discharging a little colorless watery pus. Late in the autumn he again visited the city, having ridden fifteen miles on a bicycle. He then was a stout healthy fellow, and the wound had quite healed.

From the extreme rarity of the literature touching upon injuries such as I have described, one must conclude that they are exceedingly rare. Waring (1897) in his work on "Diseases of the Liver and Gall Bladder," makes but slight mention of them, and, judging from his appended bibliography, that author must have canvassed the subject pretty thoroughly. Since that date the *Index Medicus* records very little. Thirwell Thomas, F.R.C.S., reports in the British Medical Journal, No. 1975, a case of ruptured gall bladder cured by incision and suture of the rent. In the report he particularly emphasizes the marked symptoms of collapse, the extreme rapidity of the pulse, and the nature of the accident—falling flat on the abdomen.

In the London *Lancet*, January, 1898, there is a report of "A Case of Rupture of the Common Bile Duct," by Walter Spencer, in the service of Westminster Hospital. In the opening lines of his article he states that cases of rupture of the common bile duct are exceedingly rare; that there are seldom any signs of inflammation from extravasated bile; that as a rule only a few adhesions form; that suppuration is very rare; that death usually is the result of exhaustion; and that it may not occur until many days after the injury. The case referred to by Spencer was that of a boy who was run over by a Hansom cab, the wheel passing over the upper part of the abdomen. When brought to the hospital he was collapsed and pallid, with a frequent pulse, rapid respiration and subnormal temperature. There was no bruise apparent, no tenderness over the abdomen, and no blood or sugar in the urine. Rapid pulse and respirations, vomiting, progressive emaciation and jaundice were the

prominent symptoms until the thirteenth day, when the abdomen is reported as uniformly distended and dull on percussion. On the same day an incision was made and a pint and a half of thick bile-like fluid let out. On the eighteenth day another incision in the median line was made into a fluctuating swelling in the upper third of the abdomen, which let out a quantity of fresh bile. On the twenty-second day the urine is reported as containing bile, the stools clay-colored with progressive emaciation and weakness. On the thirty-third day the patient died. The post-mortem revealed the gall bladder torn off near its entrance to the duodenum and a cavity filled with bile between the stomach, liver and lesser omentum.

A case similar to Mr. Spencer's is reported by W. H. Battle in the Clinical Society Transactions, vol. xxvii., p. 144.

Dr. Miles F. Porter, in an article on "Injuries of the Gall Duct," read before the American Association of Obstetrics and Gynæcology, probably gives the best epitome of the literature. His references show that he has been pretty well over all the works where reference might be made to the subject, including the *Index Catalogue of the Library of the Surgeon General's Office.*

To quote briefly from the article, "Injury to the hepatic ducts is usually accompanied by injury to the liver.....No case of rupture of the gall bladder or gall ducts without penetration of the abdomen is reported in *The Medical and Surgical History of the War of the Rebellion*.....The cases reported show the most frequent cause to be forces which act in a crushing manner, such as a blow on the abdomen or the passage of a wagon wheel over it. .....The symptoms as they occur are pain, shock, ascites, acholia, jaundice, cholæmia, peritonitis and inanition.....Shock is generally well marked and reaction slow.....Secondary shock means hæmorrhage.....Injuries of the common duct when they result in complete diversion of the bile from the intestines are inevitably fatal unless by some means the diversion be overcome." Following these statements are suggestions as to the best procedures when the injury is in the common bile duct, none of which apparently has been tested.

In the article Dr. Porter reported four cases—one from Tillman's Surgery, the history of which is obscure. The second from *Bryant's System of Surgery*, which died in the thirty-eighth

day. The post-mortem revealed rupture of the hepatic duct and the abdomen filled with olive-green fluid. The third case is that reported by Dr. Kernes in the *Annals of Surgery*, vol. xvi, p. 394. The case was first treated by puncture, by which two litres of a brown fluid were evacuated. The distention returned rapidly, laparotomy was resorted to and three litres of fluid evacuated. The source of the bile could not be accurately determined or the lower surface of the liver palpated on account of agglutination of intestinal loops. The peritoneal cavity was wiped out with gauze compresses and the abdominal wound closed with silk sutures. After operation the belly was swollen, with marked meteorism, vomiting and constipation. The patient, in the further progress of his illness, passed through a double-sided pulmonary hypostasis and a right-sided pleuritis requiring repeated aspiration, with complete cure after four weeks. The fourth is Dr. Porter's own case, which he saw thirty days after the accident. The abdomen had been aspirated on the twenty-sixth day and a pint of fluid removed. To quote his words: " I opened the abdomen in the mid-line, above the umbilicus, and let out ten pints of dark-colored bile, which was confined in an artificial cavity formed by adhesions. After the cavity was emptied bile welled up from the region of the gall bladder. Owing to the weak condition of the patient I contented myself with the introduction of two soft rubber drains.... .....The wound was closed up to the tubes with sutures....The patient was greatly relieved of pain by the operation, but continued to fail.....Death occurred forty-eight days after receipt of injury. Post-mortem revealed a complete division of the bile duct about its middle and a large sub-diaphragmatic abscess.

R. W. GARRETT.

KINGSTON MEDICAL AND SURGICAL SOCIETY

SEPT. 11th, 1899.—The meetings of the Society were resumed this evening after the vacation season. Dr. Herald, President, in the chair and 14 members present.

A large specimen of uric acid calculus coated with triple phosphate and ammonium urate was shewn by Dr. W. T. Connell.

It had been removed by Dr. Garrett a few days previously by the suprapubic route. Up to two weeks previous to operation the urine had been acid, then ammoniacal fermentation set in, since when the phosphate coating has occured.

Dr. Herald then delivered the annual presidential address, this being the first meeting since his election. He took as his subject "Some of the advances in Medicine." This paper appears elsewhere in this issue.

The report of the committee on an "Open Meeting" was read by Dr. Mundell. This report advised the holding of such a meeting on Nov. 1st, and outlined a programme. This report was unanimously adopted by the meeting.

Oct. 2nd, 1899.—The regular meeting of the Society was held this evening with the President, Dr. Herald in the chair and 14 members present.

Dr. Herald gave the clinical history and Dr. W. T. Connell shewed the specimens from a patient with Cirrhosis of the Liver with intense jaundice of long duration (nearly two years) and ascites. The liver was slightly smaller than usual, with granular surface and deeply pigmented. The bile ducts were patent throughout. Microscopically the liver shewed marked cirrhotic changes about the smaller bile ducts and extending between the columns of liver cells, (intracellular cirrhosis.) The cirrhosis was also intralobular involving the portal channels. The cirrhotic changes about the bile ducts and portal veins would account for both the jaundice and acites.

Dr. Connell, also shewed two nodules of melanotic sarcoma removed from the foot by Dr. D. V. Sullivan. Dr. Sullivan reported that recurrence was taking place at the site of operation.

Dr. Mundell, then brought before the Society the reports of some experimental work. (*a*) On transplantation of bladder tissue as a means of restoring the defective bladder wall in ectopia vesicae. (*b*) On exsection of portions of the liver. An extract from his paper will be found in this issue.

ASSOCIATION OF EXECUTIVE OFFICERS OF HEALTH OF ONTARIO.

THE annual meeting of this Association was held in the City Hall, London, on the 13th and 14th September, under the chairmanship of Dr. J. J. Cassidy, Toronto. About 30 members were in attendance, mainly representing Toronto and western Ontario.

At the opening session on the morning of the 13th, after the usual introductory addresses of welcome, Dr. Mackenzie, Provincial Bacteriologist, read a paper on "The odours of well waters;" of interest to those engaged in and passing judgment upon water analyses.

At the afternoon session Dr. McDonald, of Hamilton, presented a paper on "Bovine Tuberculosis," which stirred up considerable discussion. Our Ontario cattle are fortunately not so subject to Tuberculosis as those of the eastern United States or Europe. Infection occurs as in man, via the respiratory or digestive systems. Precautions are necessary to keep the disease from gaining a foothold. Proper ventilation, lighting and cleanliness of stables are of the greatest importance in preserving the health of animals. Most stables met with are the reverse of this and hence predispose to infection.

Following this discussion came papers by Drs. McClintock, Mitchell and Bryce dealing with various phases of the Tuberculosis problem in man. Practically the outcome of the papers and the discussion which followed may be summed up as follows:

(*a*) There is a decided need for the establishment of sanitaria for the consumptive poor. These sanitaria would place the individual under such surroundings as would tend to limit the extension of the disease by furnishing him with pure air, good food and a regulated life. Further, they educate the individual and the community at large, as to the nature of the disease, the means of disinfection of the infective material, and other precautionary measures.

(*b*) In home treatment greater precautions must be taken to isolate the individual and to disinfect the sputum, which is the main infective factor.

(*c*) There is a danger of infection from tubercular animals, so that all dairy cattle should be tuberculin tested and those animals re-acting must be excluded from the herd.

In the evening the public session of the Association was held, the meeting being addressed by the Mayor and Dr. Campbell, both of whom spoke of the public health of London and the work done by the local board since 1883.

Dr. Cassidy, the President, then gave his annual address which dwelt largely on the means of prevention of consumption, and upon the necessity of measures being taken to secure better and proper ventilation and sanitation of schools and other public buildings.

This address was followed by a paper by Mr. Dearness, of London, on "School Ventilation." The importance of impure air and improper ventilation in not only predisposing to disease, but aiding directly in its propagation, were brought out.

On Thursday morning (14th) the members proceeded to the London Asylum to view the sewage farm, which has been in operation there for the past ten years. This farm (about 10 to 12 acres) disposes of all the sewage and refuse (not solid) of the asylum, comprising about 1,300 individuals. There is but little odor on the farm, and the system seems to be a fairly ideal method of sewage disposal and one readily applicable to towns and small cities. The cost would not be great when the products grown on the farm are substracted from the cost of management. Certainly, this farm is an object lesson to those searching for methods of sewage disposal which will not pollute our rivers, streams and lakes, rendering their waters unfitted for fish life or for use as drinking water.

On the return from the sewage farm, Dr. W. T. Connell, of Kingston, read a paper on "The Distribution of Anthrax in Ontario," which will be found elsewhere in this issue.

Mr. Van Buskirk, C.E., of Stratford, read a paper on "Ground Air in Cities and Towns," that evoked considerable discussion on house construction and the value or otherwise of cellars. The general opinion was that cellars whose walls and floors were not constructed of hydraulic mortar could be dangerous to health owing to dampness, entrance of foul ground air, &c.

Dr. Bray, of Chatham, in continuance of this question, read

a paper on "Sanitation in habitations in relation to the incidence of contagious diseases," as illustrated in his own city. He pointed out the prevalence of diphtheria and sore throats in the low lying and dirtier parts of the city, and of typhoid under like conditions, plus a common polluted water supply.

Mr. Shantz, of Caledonia, presented for inspection a system of natural ventilation which he had devised for use in schools and public buildings.

The meeting appointed a committee of five members to examine and report upon the entire subject of ventilation.

At the final session the general business of the Association was taken up.

The committees on "Disinfectants" and on "Sanitary Pavements" were continued, the name of Dr. W. T. Connell being added to the former.

The election of officers resulted as follows :

President—Dr. Hutchison, London.

Vice-President—Mr. Van Buskirk, C.E., Stratford.

Sec.-Treas.—Dr. J. I. Mackenzie, Toronto.

Council—Prof. Shuttleworth, Toronto; Dr. W. T. Connell, Kingston; Dr. Sheard, Toronto; Dr. Bell, Berlin; Dr. Wardlaw, Galt; Dr. Hall, Chatham; Dr. Malloy, Preston.

Kingston was named as the next probable place of meeting, and the representative from this city promised to do all in his power to make this probability a certainty.

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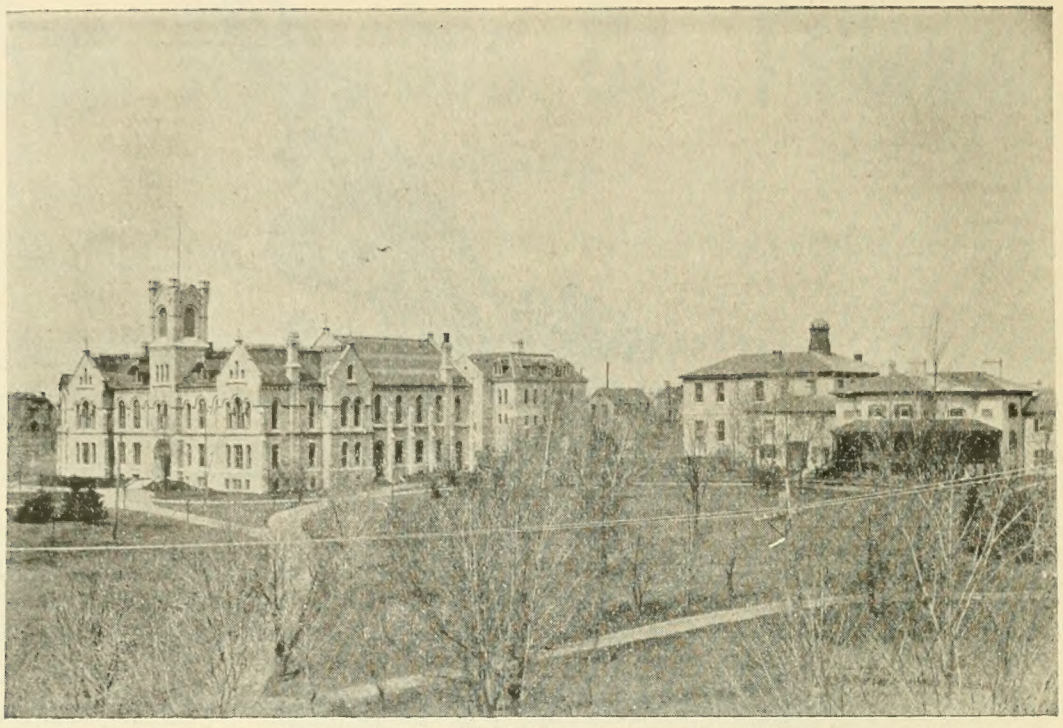

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